FRONTEND OPTIMIZATION UPDATE

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FRONT END OPTIMIZATION

- Short taper (6 m) integrated with the new chicane from Pavel's G4BL lattice (same parameters as in ICOOL)
- Started optimizing the chicane parameters   (initial values - D. Neuffer's icool lattice)
    - Chicane length L (initial value L = 6.0)
    - Chicane radius of curvature h (initial value = 0.05818 m)
    - Be absorber length (initial value = 100.0 mm)
    - On-axis field is a free parameter – optimization will be carried for B= 2.0 – 2.5 – 3.0 T

- Objectives → minimize total KE of transmitted protons $\Sigma\ KE_{protons}$

  → Maximaiz number of transmitted muons $\Sigma\ N_{mu}$

(Later will add cuts or track through the whole FE including the 4D cooler)

Run 100 K particles through the chicane with initial parameters $\Sigma\ KE_{protons} = 29\ \Sigma\ N_{mu} = 4377$

Current optimization results (still analyzing more data)

H	L	Be thickness	$\Sigma\ KE_{protons}$	$\Sigma\ N_{mu}$		
0.033001513	5	399.60714	2.38666	3482		
0.015021572	18.97224	317.38278	4.36433	3801		
0.015021572	18.97224	404.70703	1.40286	3228		
0.038975797	5	399.60714	1.46534	3267		
0.015021572	18.97224	317.38278	4.36433	3801		
0.033001513	11.09433	256.5627	1.86744	3388		